

WHAT IS CLAIMED IS:

1. A solid-state imaging device having:

a photodetector including a photoelectric conversion device for converting an incident optical signal into a current signal and a switch for outputting said current signal to an output terminal;

an integrator circuit for inputting and integrating the current signal outputted from the output terminal of said photodetector, so as to output a voltage signal to an output terminal thereof; and

a signal processing unit for processing the voltage signal from said integrator circuit;

said signal processing unit comprising:

a variable capacity integrator circuit having a capacitor for inputting the voltage signal outputted from the output terminal of said integrator circuit, an amplifier for inputting to an input terminal the voltage signal outputted from said capacitor, a variable capacity part, disposed between the input and output terminals of said amplifier, having a variable capacity value, and a reset switch disposed between the input and output terminals of said amplifier, said variable capacity integrator circuit outputting from the output terminal of said amplifier an integrated signal having a value corresponding to a change of the voltage signal inputted to said capacitor;

a comparator for inputting the integrated signal

outputted from said variable capacity integrator circuit,
comparing the value of said integrated signal with a
reference value in terms of magnitude, and outputting a
comparison result signal; and

5 a capacity control section for inputting the
comparison result signal outputted from said comparator,
controlling the capacity value of said variable capacity
part according to said comparison result signal, and
outputting a first digital signal corresponding to the
10 capacity value of said variable capacity part when it is
determined according to said comparison result signal that
the value of said integrated signal and said reference value
coincide with each other at a predetermined resolution.

2. A solid-state imaging device according to claim
15 1, wherein said signal processing unit further comprises
a readout section for inputting the first digital signal
outputted from said capacity control section and outputting
a second digital signal corresponding to said first digital
signal.

20 3. A solid-state imaging device according to claim
1, wherein said photodetectors are arranged in a first
direction, while respective output terminals of the switches
thereof are connected to each other so as to form a vertical
photodetective section with a common signal output terminal,
25 M1 sets of said vertical photodetective sections being
arranged in a second direction so as to constitute a

photodetective unit;

said solid-state imaging device further comprising:

M2 sets of said integrator circuits (where $M2 \leq M1$);

M3 sets of said signal processing units (where $M3 \leq M2$,

5 $M3 < M1$); and

selective connecting means for selectively connecting
M1 sets of said vertical photodetective sections, M2 sets
of said integrator circuits, and M3 sets of said signal
processing units to one another.

10 4. A solid-state imaging device according to claim
3, wherein said signal processing units are disposed in a
side portion on an end side of said photodetective unit
parallel to said first direction.